

REMARKS

Claims 12, 13, 25-27 and 29 have been amended. Applicants reserve the right to pursue the original claims and other claims in this application and other applications. Claims 12-15, 18-27, 29-32, 42 and 43 are pending in this application.

The specification stands objected to as failing to provide proper antecedent basis for the claimed subject matter with respect to claim 25. The Office Action contends that the means for processing a first audit record, a second audit record and usage data as recited in claim 25 do not have proper antecedent basis in the specification.

Independent claim 25 includes the recitation of a controller. Fig. 1, item 44, and its corresponding description in paragraph [0018] specifically describes one or more controllers that is included in the data center 40. As expressly detailed above, the terms and phrases used in the claims find clear support in the written description.

Claims 14 and 27 stand objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 14 and 27 have been amended to address the Examiner's concerns.

Claims 12-15, 18-27, 29-32, 42 and 43 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 12 and 25 have been amended to address the Examiner's concerns.

Claims 25-27, 29-32 and 43 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action contends that it is unclear whether claim 25 is claiming a data center or a data center in combination with a dispensing device. The Office Action contends that the claim positively recites a dispensing device. Applicants respectfully disagree. Claim 25 is directed to a data center and positively recites an interface circuit that receives audit records and usage data from a dispensing device, and a controller coupled to the interface circuit that is configured to process the audit records and the usage data. Claim 25 does not positively recite the dispensing device.

Claims 25-27, 29-32 and 42 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Claim 25 has been amended and is now clearly directed to statutory subject matter.

Claims 12, 18-25, 29-32, 42 and 43 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Leon (US 6,424,954). Claims 13-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Leon in view of Mosher (US 5,799,322). Reconsideration is respectfully requested.

As noted in the current specification, in many instances it is desirable, or in some cases mandated by the postal authority, for value dispensing devices, e.g., postage meters, to maintain usage information. Such usage information can include, for example, the amount of postage dispensed by the meter, as well as other data, including, for example, total mail piece counts, piece counts for different classes of mail, piece counts for each different postage amount dispensed, etc. The usage information is typically compiled over a predetermined period of time, referred to as an audit period, such as, for example, weekly, monthly, or yearly. At the end of the determined audit period, the captured data for that audit period is transmitted to a data center, such as, for example, a data center operated by the meter manufacturer, where it is used to prepare reports. The prepared reports can be sent to the postal authority. These reports may then be utilized by the postal authorities (or the meter manufacturer) for such things, for example, as statistical analysis of use of the meter population, customer billing, etc.

There are problems, however, with conventional systems and methods for preparing data capture reports for a given audit period. One such problem is that the data capture data is blindly trusted for preparation of a report. The data capture data, however, may not be fully trustworthy when received from the postage meter. For example, since the usage information is not securely stored within the device, it is possible for a dishonest person to modify the data capture data before it is transmitted to the meter manufacturer. For example, the value of the total amount of postage dispensed during the audit period could be modified in such a way that this value is made lower than the actual value used. In cases where the reports are used for billing

purposes, the postal authority would under bill the customer, based on the modified data capture report, and thus the postal authority would be defrauded of funds due.

The present invention alleviates the problems associated with the prior art and provides a system and method that can detect tampering with data capture data, as well as verify the authenticity of data capture data, in a value dispensing system. At the beginning of an audit period, an audit record is generated by the postage meter that includes the current register values at the beginning of the audit period and a digital signature generated by the device. At the end of the audit period, a second audit record is generated by the postage meter that includes the register values at the end of the audit period and a digital signature generated by the device. This end of period audit record is then transmitted to the data center, along with the data capture data and the start of period audit record (if not previously transmitted to the data center). The data center, after obtaining both the end of period audit record and start of period audit record, will verify the digital signature of the both audit records. Successful verification of the digital signatures authenticates the device to the data center, and indicates that the register values are valid, as any modification of the data contained within the audit records would result in a failure of the signature verification. The data center can then reconcile the postage meter usage, i.e., register values, by comparing the difference between the register values from the start of period audit record and the end of period audit record with the values as contained within the data capture data for the audit period. Any discrepancies between these values indicate that the data capture data may not be correct, and a further investigation can be performed. If there are no discrepancies, the data capture data is deemed to be accurate and the data can be utilized to prepare reports with a high degree of certainty that it accurately reflects the actual usage of the postage meter. (See Specification, paragraphs [0022] through [0025]).

In view of the above, claim 12 is directed to a method for a data center to process usage data of a value dispensing device that comprises "receiving a first audit record from the value dispensing device, the first audit record generated by the value dispensing device at a start of an audit period, the first audit record including a value of at least one register maintained by the value dispensing device at the start of the audit

period and a first digital signature; receiving a second audit record from the value dispensing device, the second audit record generated by the value dispensing device at an end of the audit period, the second audit record including a value of the at least one register maintained by the value dispensing device at the end of the audit period and a second digital signature; receiving usage data from the value dispensing device for the audit period; determining that the first and second digital signatures verify; determining a difference between the value of the at least one register at the end of the audit period and the start of the audit period; comparing the determined difference with corresponding data provided in the usage data; and if the determined difference correlates with the corresponding data provided in the usage data, generating a usage report for the value dispensing system based on the usage data."

Leon, in contrast is directed to a postage metering system in which an audit transaction is performed periodically to reset a timer. If the timer times out before an audit transaction is performed, the secure metering device (SMD) transitions to a state in which no further operation (except for an audit transaction) is permitted. A user requests an audit causing the host PC to send an audit request message to the SMD. The SMD then sends the host PC a signed message that includes the required information, which can include the current contents of the secure revenue registers, the device ID number, the current date and time, and a transaction serial number generated by the SMD. The host PC forwards the signed message to a system server, which receives and validates the message. As part of the processing, the system server authenticates the signed message using the SMD's public key and analyzes the data included in the message. The system server then sends the host PC a signed message that includes the response data, including the same device ID and transaction number from the message received earlier. The host PC forwards this signed message to the SMD, which validates the message by verifying the signature and determining if the message is of an expected type. If the signature is valid and the message is of an expected type, the SMD determines if the data contents of the message is correct by verifying the transaction serial number. If the data is valid, the SMD resets the timer and transitions to an operating state. (Col. 18, line 30 to Col. 19, line15).

Thus, in Leon the system uses only a single audit record for the purpose of resetting a timer. There is no disclosure, teaching or suggestion in Leon of "receiving a second audit record from the value dispensing device, the second audit record generated by the value dispensing device at an end of the audit period, the second audit record including a value of the at least one register maintained by the value dispensing device at the end of the audit period and a second digital signature" as is recited in claim 12. In Leon, there is no second audit record generated at the end of an audit period. The system in Leon uses only a single audit record taken at a specific point in time. The Office Action appears to be contending that the audit requests in Leon sent at the end of one period are also considered to be sent at the beginning of a subsequent period, and therefore this single audit request in Leon is the same as a first audit record generated at the start of an audit period and a second audit record generated at the end of the audit period. It is unclear how a single audit request in Leon is analogous to a first audit report and a second audit report that are generated at different times. There is no disclosure, teaching or suggestion in Leon of "receiving a first audit record from the value dispensing device, the first audit record generated by the value dispensing device at a start of an audit period, the first audit record including a value of at least one register maintained by the value dispensing device at the start of the audit period and a first digital signature; receiving a second audit record from the value dispensing device, the second audit record generated by the value dispensing device at an end of the audit period, the second audit record including a value of the at least one register maintained by the value dispensing device at the end of the audit period and a second digital signature" as is recited in claim 12.

There is also no disclosure, teaching or suggestion in Leon of "receiving usage data from the value dispensing device for the audit period." While the messages in Leon may provide current information, there is nothing in Leon that describes any type of usage data for an audit period. The Office Action has not provided any indication as to where this feature is allegedly disclosed, taught or suggested in Leon.

There is also no disclosure, teaching or suggestion in Leon of "determining a difference between the value of the at least one register at the end of the audit period and the start of the audit period." The Office Action contends that Col. 9, lines 11-20

and Col. 61, line 51 to Col. 62, line 13 of Leon disclose this feature. Col. 9, lines 11-20, of Leon are reproduced below.

The SMD supports the provider role by providing the following services: Registration, Funding, Audit, and Withdrawal. These services are described in detail below. Whenever one of these services is requested, the SMD validates that the requester is an authorized provider. This is achieved by using the provider's public key to validate the signature on the service request that has been signed using the provider's private key. The provider's public key is retrieved from the Provider X.509 certificate that is loaded by the Crypto-Officer during initialization.

There is nothing in this passage that discloses, teaches or suggests "determining a difference between the value of the at least one register at the end of the audit period and the start of the audit period."

Col. 61 of Leon describes a message, processed during a funding transaction, which instructs the SMD to increase the value in the descending register, thereby increasing the SMD's revenue store. The message includes a type code that identifies the FUND3 message, followed by a Postage Value Download field that was sent to the host PC by the system server. The Postage Value Download field includes the device identification, a serial number identifying the particular secure transaction, a control total (ascending register plus descending register) and the value by which the descending register will be increased. Upon receipt of the FUND3 message, the SMD pads the PVD field as necessary under FIPS-180, and verifies the digital signature. If the signature is valid, the SMD checks the Transaction ID included in the PVD field against the Transaction ID included in the FUND2 message. If the IDs are not equal, the SMD responds by sending the host PC an ERROR message that includes an error code of TRANS_ID and returning to the operating state it occupied at the start of the Funding transaction. If the Transaction IDs are equal, the SMD compares the value included in the Control Total with the sum of the SMD's current Ascending and Descending registers plus the value included in the Funding Revenue field of the message. If the Control Total included in the message is not equal to the sum, the SMD has already processed this funding transaction or is in some other way unsynchronized with the system server, and does not update the Descending register. The SMD sends the host PC an ERROR message that includes a CONTROL error number and then transitions

to the Registered state. If the Control Total is equal to the sum, the SMD increases the value of the internally stored Descending register, and prepares and sends a FUND4 message to the host PC. The SMD also records the Funding Revenue amount and the date and time of this Funding transaction, so it can report it as the previous values in the next Funding transaction. (Col. 61, line 5 to Col. 62, line 44). Nowhere in the passages relied upon by the Office Action is there any disclosure, teaching or suggestion of determining a difference between the value of the at least one register at the end of the audit period and the start of the audit period. The funding transaction in Leon is not in any way related to any type of audit period, nor is it related to the audit transaction previously discussed. There are no first or second audit records generated at the start and end of an audit period, and there is no determination of a difference between the value of a register at the end of the audit period and the start of the audit period.

There is also no disclosure, teaching or suggestion in Leon of "comparing the determined difference with corresponding data provided in the usage data" as is recited in claim 12. The Office Action contends that Col. 46, lines 48-54 and Col. 62, lines 4-13, disclose this feature. Col. 46, lines 48-54 of Leon are reproduced below.

Upon receipt of an AUDIT1 message, the SMD creates a Device Audit field as shown below, signs it, and sends it to the host PC in the AUDIT2 message. The host PC sends this field to the system server as part of an Audit transaction. If the system server is able to verify the Device Audit field, the host PC sends an AUDIT3 message to the SMD.

There is nothing in this passage that discloses, teaches or suggests "comparing the determined difference with corresponding data provided in the usage data" as is recited in claim 12.

As described in Col. 62 of Leon, the SMD compares the value included in the Control Total of the FUND3 message with the sum of the SMD's current Ascending register and Descending registers plus the value included in the Funding Revenue field of the message. None of the values being compared in Leon are a determined difference (of the value of a register at the end of the audit period and the start of the audit period) or any type of corresponding data provided in the usage data.

There is also no disclosure, teaching or suggestion in Leon of generating a usage report for the value dispensing system based on the usage data if the determined difference correlates with the corresponding data provided in the usage data as is recited in claim 12. The Office Action contends that Fig. 8F and Col. 62, lines 14-43, disclose this feature. As described in Col. 39 of Leon, Fig. 8F shows a diagram of a device status screen 890. The Status Screen 890 displays information about the SMD and the user, which may be helpful for tracking and troubleshooting by the provider or U.S. Postal Service. Fig. 8F of Leon is reproduced below.

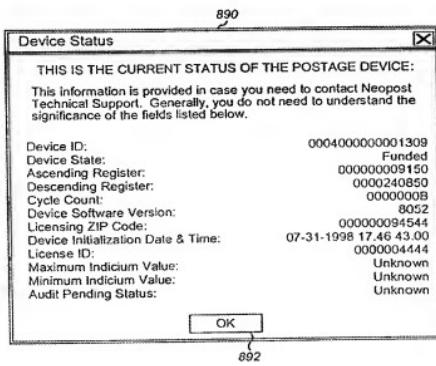


FIG. 8F

The current status of the postage device is not the same as a usage report generated based on usage data. With respect to Col. 62, as stated in Col. 62, lines 14-43, of Leon, if the Control Total is equal to the sum, the SMD increases the value of the internally stored Descending register, and prepares and sends a FUND4 message to the host PC. The SMD also records the Funding Revenue amount and the date and time of this Funding transaction, so it can report it as the previous values in the next Funding transaction. Increasing the value of the descending register is not the same as generating a usage report based on usage data. Furthermore, the FUND4 message is not a usage report – it merely is a status message to indicate the status of the postage download.

For at least the above reasons, Applicants respectfully submit that claim 12 is allowable over the prior art of record. Claims 13-15, 18-24 and 42, dependent upon claim 12, are allowable along with claim 12 and on their own merits.

Claim 25 includes limitations similar to those of claim 12. For the same reasons given above with respect to claim 12, Applicants respectfully submit that claim 25 is allowable over the prior art of record. Claims 26, 27, 29-32 and 43, dependent upon claim 25, are allowable along with claim 25 and on their own merits.

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims are in condition for allowance and favorable action thereon is requested.

Please charge any additional fees that may be required or credit any overpayment to Deposit Account Number 16-1885.

Respectfully submitted,

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